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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,568	01/23/2004	Gert-Jan Heerens	081468-0307814	3196
909	7590	04/05/2005	EXAMINER	
PILLSBURY WINTHROP, LLP P.O. BOX 10500 MCLEAN, VA 22102			NGUYEN, HUNG	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/762,568	Applicant(s) HEERENS ET AL.	
	Examiner Hung Henry V. Nguyen	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/23/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Shiraishi (U.S.Pat. 6,842,221).

With respect to claim 15, Shiraishi (figure 1) discloses an exposure apparatus comprising all of the limitations of the instant claim such as: a patterning device (R) configured to impart a beam of radiation (EL) with a desired pattern in its cross-section, the patterning device being supported by a support structure (14); a projection system (PL) configured to project the patterned beam onto a target portion of a substrate (W); a conditioned chamber (15) that houses the supporting structure; an actuator (see col.24, lines 24-34) configured to introduce the

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patterning device (R) into the conditioned chamber (15) and an alignment system disposed outside the conditioned chamber (15), to align the patterning device with the projected beam of radiation (see col.38, lines 47-50).

As to claims 16-21, Shiraishi further teaches the actuator includes an actuator arm having a carrier structures for supporting and moving the patterning device (R) from the alignment system to the support structure (see col.24, lines 24-34) and the carrier structure is provided with fixation device configured to secure the patterning device to the carrier structure and a docking system is provided to dock the carrier structure (see figure 9). Moreover, Shiraishi teaches the conditioned chamber comprising a reduced pressure environment (see col.25, lines 30-63) and a reduced particle concentration environment (see col.35, lines 5-11).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama (U.S.Pat. 6,697,145) in view of Shiraishi (U.S.Pat.6,842,221).

With respect to claims 15-21, Aoyama discloses a lithographic apparatus comprising all of the basic features of the instant claims such as: an illumination system (see col.6, lines 26-30) for providing a beam of radiation; a support structure constructed to support a patterning device (30) and the patterning device configured to impact the beam of radiation with a desired pattern

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in its cross-section; a substrate stage (25) for holding a substrate (10) ; a projection system (28) for projecting the predetermined pattern formed on the patterning device onto the substrate and a conditioned chamber (2) for reducing pressure environment and reducing particle concentration environment (see col.6, lines 65-67) and an actuator (11, 12) configured to introduce at least one of the patterning device and the substrate into the condition chamber and an alignment system (17) configured to position the substrate in alignment with the projected patterned beam of radiation wherein the alignment system is disposed outside of the conditioned chamber (see figure 2). Furthermore, Aoyama teaches the actuator including an actuator arm having a carrier structure configured to move the substrate from the alignment system to the substrate stage. (see col.5, lines 25-42) and the carrier structure is provided with a fixation device (11-14, 16) to fix the substrate to the carrier structure and the alignment system (17) is provided with a docking system (figure 1) configured to dock the carrier structure. Aoyama does not expressly disclose an alignment system disposed outside of the conditioned chamber for aligning the patterning device with the projected patterned beam radiation. As discussed above Shiraishi disclose the an alignment system configured to position the substrate in alignment with the projected patterned beam of radiation wherein the alignment system is disposed outside of the conditioned chamber. It would have been obvious to a skilled artisan to combine the teachings of Aoyama and Shiraishi to obtain the invention as specified in claims 15-21. It would have been obvious to a skilled artisan to employ the alignment system as suggested by Shiraishi into the lithographic system of Aoyama for at least the purpose of alignment of the patterning device outside of the exposure system and reducing the overall installation area of the exposure system, in which high performance air conditioned is required.

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5. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi (U.S.Pat. 6,842,221) in view of Nishi (U.S.Pat. 6,798,491).

As to claims 1-14, Shiraishi discloses an exposure apparatus and corresponding method comprising substantially all of the limitations of the instant claims including a condition chamber (40) for containing the substrate and an alignment system, disposed outside the condition chamber (40), configured to position at least the substrate in alignment with the projected beam of radiation by detecting position and orientation of at least three reference points on the periphery including the notch of the substrate (W) via optical sensors and adjusting the position and orientation of the at least substrate in accordance with the reference points. Shiraishi does not specifically disclose determining position and orientation of the substrate and adjusting the position and orientation of the substrate based on the reference points on the carrier structure. However, this alignment device/technique is well known per se. Nishi teaches an exposure apparatus where the an alignment system is provided to position at least the substrate in alignment with the projected pattern beam of radiation by determining the position and orientation of the substrate relative to a reference point on a carrier structure (see figure 8 and col.31 lines 18-42). In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Shiraishi and Nishi to obtain the invention as specified in claims 1-14 of the present invention. It would have been obvious to a skilled artisan to employ the alignment system as taught of Nishi into the exposure device of Shiraishi for the purpose of pre-alignment the substrate with the projected pattern beam of radiation, outside of the exposure system thereby the overall

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installation area of the exposure system is reduced and throughput of the exposure device is greatly improved.

6. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama (U.S.Pat. 6,697,145) in view of Nishi (U.S.Pat.6,798,491).

With respect to claims 1-14, Aoyama discloses a lithographic apparatus and corresponding method comprising substantially all of the limitations of the claims as discussed above. Aoyama lacks to show determining position and orientation of the substrate and adjusting the position and orientation of the substrate based on the reference points on the carrier structure. Nishi teaches an exposure apparatus where the an alignment system is provided to position at least the substrate in alignment with the projected pattern beam of radiation by determining the position and orientation of the substrate relative to a reference point on a carrier structure (see figure 8 and col.31 lines 18-42). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Aoyama and Nishi to obtain the invention as specified in claims 1-14 of the present invention. It would have been obvious to a skilled artisan to employ the alignment system as taught of Nishi into the exposure device of Aoyama for the purpose of pre-alignment the substrate with the projected pattern beam of radiation, outside of the exposure system thereby the overall installation area of the exposure system is reduced and throughput of the exposure device is greatly improved.

Prior Art Made of Record

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nishi (6,051,843) discloses an exposure apparatus for performing reticle prealignment based on external form reference on reticle loader.

Applicant's amendment/Arguments

8. Applicant's amendment filed March 2, 2005 has been entered. Claims 1-2, 8-9, 15-17 have been amended. Applicant's arguments with respect to prior art rejection have been carefully reviewed but have been traversed in view of new ground of rejections as set forth above.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V. Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hvn
3/25/05



HENRY HUNG NGUYEN
PRIMARY EXAMINER